

*T. poonaensis* were reported only once from the Indian subcontinent by Tikader and Malhotra (1974) from Poona, Maharashtra. This family is little known in India (Tikader and Malhotra 1974), hence it is a significant observation. These spiders mimic the beetles of Family Tenebrionidae. Their cephalothorax, legs and abdomen are reddish-brown. In the present study, these spiders were found inhabiting moist places like decaying leaves of the banana plant, while Tikader and Malhotra (op. cit.) found them under stones and dead bark of trees. Clearly, they prefer moist, dark, damp places, especially in decaying organic matter like dead leaves or the bark of a tree.

*Triaeris manii* Tikader & Malhotra  
(Plate 1, Fig. 1)

Cephalothorax, legs and abdomen reddish-brown. Abdomen nearly elliptical, clothed with fine hairs, scutum on dorsal side complete, on the ventral side incomplete, resembling the elytra of coleopterans. It measures about 2.4 mm in total length, Carapace 1.0 mm in length and 0.7 mm in width, whereas abdomen 1.4 mm in length and 1.2 mm in width. Males, females and juveniles were sighted in the field. They seem to be uncommon in the banana fields. Higher numbers were sighted in January.

*Triaeris poonaensis* Tikader & Malhotra  
(Plate 2, Fig. 2)

Like *T. manii*, these spiders are red,

abdomen nearly elliptical, clothed with fine hairs, Dorsal side (except a little posterior part) with conspicuous scutum. Tikader and Malhotra (1974) reported males with complete scutum, unlike females. Ventral side also with scutum extending to base of spinnerets. Scarce in banana fields, only females and juveniles were sighted. Total length c. 2.8 mm, Carapace 1.0 mm in length and 0.8 mm in width, abdomen 1.9 mm in length and 1.2 mm in width. Higher numbers were sighted in January, as in *T. manii*.

The occurrence of uncommon spider species in a banana field indicates that the banana agroecosystem provides suitable conditions for breeding of spiders. Detailed studies of spider biology and ecology could be conducted in this agroecosystem.

## ACKNOWLEDGEMENT

We thank Dr. B.K. Biswas, Zoological Survey of India, Kolkata, for confirmation of species and for literature.

March 7, 2001

MANJU SILIWAL  
DOLLY KUMAR  
*Division of Entomology,  
Department of Zoology,  
Faculty of Science,  
M.S. University of Baroda,  
Vadodara 390 002,  
Gujarat, India.*

## REFERENCE

TIKADER, B.K. & M.S. MALHOTRA (1974): Studies on some rare spiders of the family Oonopidae from Maharashtra, India. *Oriental Ins.* 8(4): 495-501.

37. VARIATIONS IN THE WEB OF TWO RELATED SPECIES  
OF SPIDERS *GASTERACANTHA UNGUIFERA* SIMON  
AND *GASTERACANTHA HASSELTII* C.L. KOCH

(With two text-figures)

Silk plays an important role in the life of spiders. At all life stages, spiders have the ability

to release silk (Hansell 1984), which is used not only to spin prey capture webs but also to make

draglines, nests, retreats, cocoon, and for ballooning and encapsulating the prey, among other uses (Kaston 1978, Hansell 1984, Dean and Sterling 1985).

Spiders weave prey capture webs, which vary considerably in shape, size and design, depending on the species and on their age. These variations, however, are common among spiders of the same family.

Members of the Family Araneidae are well known for decorating their orb webs with stabilimentum or with small fuzzy silk balls. Though these modifications in the prey capture webs are known to the genus level, variation at the species level is not sufficiently documented.

A field survey was conducted in 1999-2000 for spider diversity and biology at Jessore Sloth Bear Wildlife Sanctuary (JSBWS), Banaskantha district, Gujarat which encompasses an area of 180.6 sq. km and is part of the Aravalli range that extends into north Gujarat. The forest type, according to Champion and Seth (1968), is Dry Deciduous.

During the study, two species of *Gasteracantha*, *G. unguifera* Simon and *G. hasseltii* C.L. Koch were observed in large numbers. These two species of spiders have small but distinct differences in their morphology and are being reported for the first time from Gujarat state. Nevertheless, what attracted our attention was the remarkable difference they exhibited in the architecture of their webs.

Members of the genus *Gasteracantha* are known to prepare a unique web consisting of a typical orb-web with some small silk balls along the viscid spirals. Later, these silk balls are entangled with debris to form a rounded mass of waste products, the size of a spider (Tikader 1987).

The web of *G. unguifera* (Fig. 1) showed a typical Gasteracanthan design. It had an orb-web in the centre, where the female spider usually rests. Several irregular strands (similar to cobweb) were also found attached to the spiral

and radial threads of the main orb-web. These irregular silken threads were seen on all sides of the orb-web over a large area, and their distal ends were attached to a suitable substratum, normally plant twigs or the trunk of a tree. The orb-web and the irregular silken strands were decorated with very conspicuous milky-white beads of silk. The web was noticeable from a distance due to the beads. The diameter of the web was about 35-40 cm, but the area covered by the web was about 1-2 m due to the presence of irregular threads. Webs were always found about 0.9-1 m above the ground. These spiders were sighted throughout the year in the JSBWS, but were relatively less abundant. Males were found in their small separate orb-web (10-14 cm in diameter) that was attached to the large female orb-web with special mating threads. By pulling these threads, the males announce their presence to the female.

The orb-web of *G. hasseltii* (Fig. 2) was found attached to the leaves and twigs of shrubs

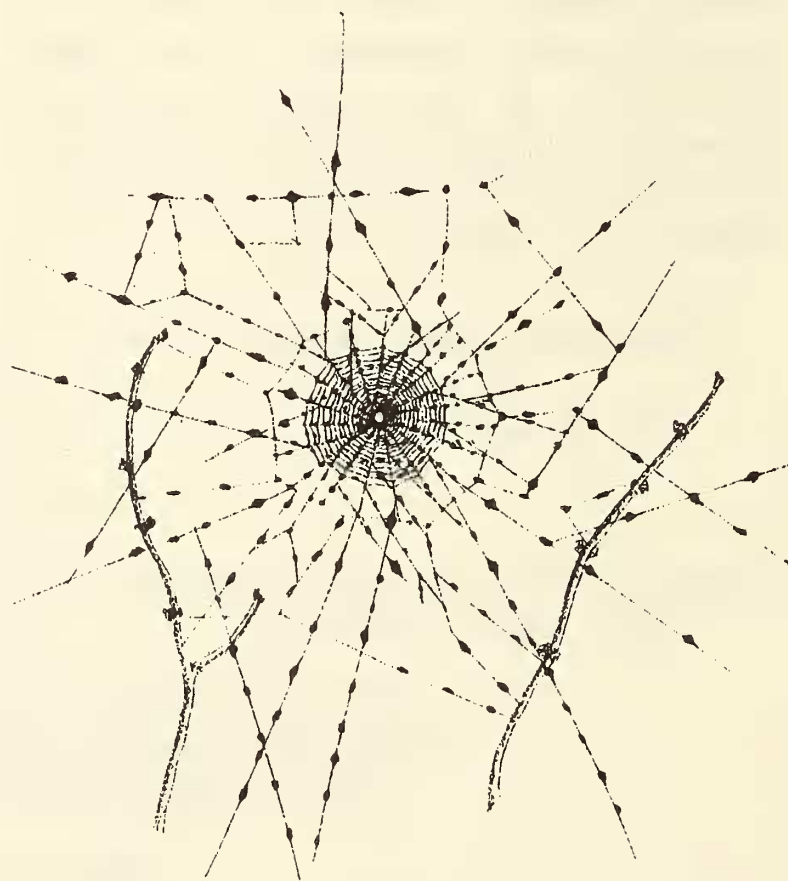


Fig. 1: Web of *Gasteracantha unguifera* with conspicuous silken beads and irregular strands radiating from the main orb-web

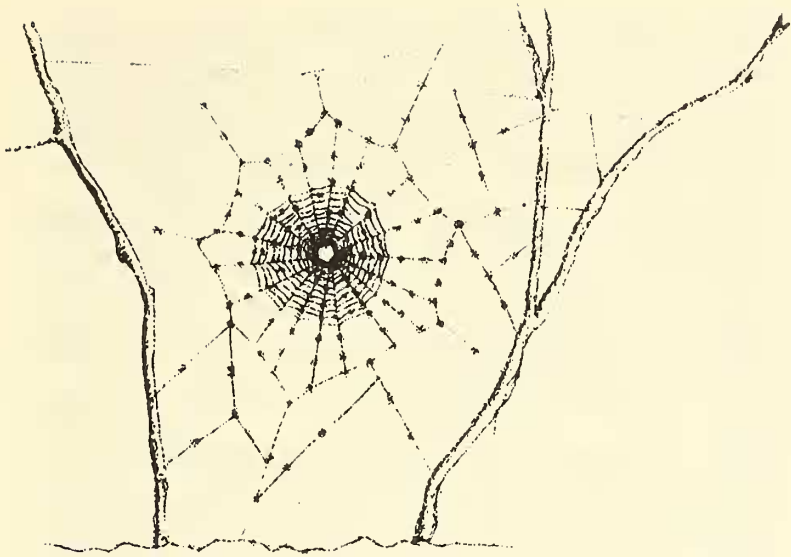


Fig. 2: Web of *Gasteracantha hasseltii* with indistinct fuzzy silk beads

with a few silken strands. The orb-web had very faint silken beads or fuzzy silk on the radial as well as on the spiral threads, which were noticed only after close and careful observation. Moreover, these beads or fuzzy silk were not observed in the webs of subadults. The web was made among the low line vegetation, very close to ground level (3-4 cm above the ground) and its diameter was about 40-56 cm. The size of the web varied considerably, depending on the availability of space. These spiders were sighted from April to November in the JSBWS. Juveniles were seen more frequently in April-May, while adults were found till November.

Tikader (1987) opined that *Gasteracantha* uses the silken beads in their web mainly as a

scaring or camouflaging device against predators. *G. hasseltii* make their webs in the lower strata of the forest ecosystem where they are well camouflaged with the ground vegetation against predators. Hence, *G. hasseltii* needs no false silken bead in their web for protection. *G. unguifera* make the web above the ground cover, which make them noticeable to predators. Therefore, they make a number of conspicuous silken beads in the web to misguide their predator. Hence, it can be concluded that *Gasteracantha* species, which occupy various vertical strata in a forest, alter their web patterns probably to suit their surroundings and thus escape predation.

#### ACKNOWLEDGEMENT

We thank SRISTI, Ahmedabad for financial support under the GEF/UNDP project on dry land biodiversity.

May 30, 2001

MANJU SILIWAL  
B. SURESH  
BONNY PILO  
*Division of Biodiversity,  
Dept of Zoology,  
M.S. University of Baroda,  
Baroda 390 002, Gujarat,  
India.*

#### REFERENCES

- CHAMPION, H.G. & S.K. SETH (1968): A revised survey of the forest types of India. Government of India Press, New Delhi.
- DEAN, D.A. & L. STERLING (1985): Size and phenology of ballooning spiders at two locations in eastern Texas. *J. Arachnol.* 13: 111-120.
- HANSELL, M.H. (1984): Animal Architecture and Building Behaviour. Longman Inc, New York.
- KASTON, B.J. (1978): How to know the spiders. 3rd ed. W.C. Brown Co., Dubuque, Iowa.
- TIKADER, B.K. (1987): Handbook of Indian Spiders. Zoological Survey of India, Calcutta.

### 38. FIRST RECORD OF *JULIA JAPONICA*, A BIVALVED GASTROPOD FROM THE INDIAN OCEAN

(With three text-figures)

Bivalved gastropods were first recorded from Indian seas by Pravakar Rao (1965). He

recorded *Berthelinia (Thamanovalva) limax* from the Mandapam camp, Gulf of Mannar, among